

REMARKS

The present application discloses an “energy-free” refrigeration door that may be used for freezers, refrigerators and similar units to provide condensation control, thermal insulation and visibility of the contents of the unit. Prior art approaches to preventing or reducing condensation on such doors on commercial refrigeration units used in markets have involved passing an electrical current through a conductive coating on one or more of the glass surfaces of the insulating glass units (IGUs) comprising the door. The electric current heats the surfaces of the door so that the temperature of the glass is maintained above the dew point of the warmer ambient air of the building housing the market.

The present application provides a refrigeration door that overcomes the deficiencies of the prior art doors by providing an “energy-free” door that controls condensation by providing thermal insulation and a desired amount of visible transmittance by using a low-emissivity (“low-E”) coated glass in the IGU comprising the door. To achieve this result, Applicant discovered that an IGU with low-E coated glass having an emissivity substantially equal to or less than 0.05 and/or a U value substantially equal to or less than 0.2 BTU/hr sq ft - F. could achieve the desired result without the application of electricity to heat the door.

The use of low emissivity coatings on glass makes it possible to reduce the long wave radiation exchange between adjacent glass panes. Coating one of the adjacent glass panes with a low emissivity coating reduces the long wave radiation exchange between the panes, resulting in less heat being transmitted. Applicant discovered that

the use of a low E coating that provides an IGU having an emissivity substantially equal to or less than 0.04 and/or a U value substantially equal to or less than 0.2 BTU/hr - sq ft - F provides improved IGU units having improved condensation control where the interior temperature of the refrigeration compartment is substantially near and below freezing.

The claims of the present application have been amended to correct certain informalities previously brought to the attention of Applicant in the applications from which the present application claims priority. Applicant respectfully submits that the pending claims fully comply with the requirements of 35 U.S.C. § 112, paragraph 2.

Claims **26-28, 30, 37-39, 61-64, 90-93, 95-97, 104-106** and 112 were rejected under 35 U.S.C. § 102(e) as being anticipated by Richardson et al., U.S. Patent No. 6,606,832, in the application from which the present application claims priority. It was asserted that the '832 patent discloses a door for a display case having at least a first and a second sheet of glass and in some instances a third sheet of glass which are separated by spacers and sealants so that the sheets of glass are spaced apart. It was further asserted that the '832 patent teaches the use of glass sheets having a low emissivity coating such that the glass sheets form an insulating glass unit that prevents the formation of condensation.

To anticipate a claim at issue the asserted reference must disclose each element of that claim. Because the '832 fails to disclose each element of claims 26-28, 30, 37-39, 61-64, 90-93, 95-97, 104-106 and 112, Applicant respectfully submits that the rejection be withdrawn.

The '832 patent discloses refrigerator doors that have glass panels with low emissivity coatings that provide "an emissivity of 0.20 or less." It further discloses that the coating is formed from pyrolytic tin oxide or other suitable material. See column 14, lines 18-21 of the '832 patent. The '832 patent discloses that the glass panes can also have an electro-conductive coating applied to the glass surfaces together with the low emissivity coating such that an electric current can be passed through the coating for heating the glass surface. See column 14, lines 28-31. It further discloses that electrical connections for the door can be included if door rails are to be heated, or if current is to be supplied to a conductive coating on the glass of one of the glass panes of the refrigeration unit. See column 9, lines 57-60. Nowhere does the '832 patent disclose or suggest the use of low-E glass in insulated glass units having an emissivity equal to or less than 0.04 to 0.057 and/or a U value substantially equal to or less than 0.2 BTU/hr - sq ft - F to substantially prevent the formation of condensation without the application of electricity for heating the first outer surface of the insulated glass unit as claimed in the present application.

The IGUs of the doors discovered and claimed by present application differ from those of the '832 patent. The present application provides doors having glass panels with a low emissivity coating that, inter alia, provides an emissivity substantially less than or equal to 0.05. The use of the coatings taught by the present application eliminates the need for an electric current to warm the doors so that condensation is controlled in the environment in which the refrigeration units are used.

Those of skill in the art would generally understand that any glass with an

emissivity of 0.2 or less is considered a low-E glass. The '832 patent never provides or defines the emissivity of the particular glass needed to eliminate the need for an independent means of heating the panes of glass to eliminate condensation. In contrast, the present application defines the emissivity of the glass needed to eliminate condensation and provides specific examples of commercial embodiments that may be used to achieve the claimed invention. That emissivity is significantly lower than the general citation of low-E glass with an emissivity of 0.2 in the '832 patent.

Because the '832 patent fails to disclose all of the elements of the claims of the present application, it cannot anticipate those claims. Applicant respectfully requests that the rejection of claims **26-28, 30, 37-39, 61-64, 90-93, 95-97, 104-106** and **112** under 35 U.S.C. § 102(e) be withdrawn.

Claims **1-3, 5-21, 23-25, 31-36, 40-42, 44-46, 47-60, 65-70, 71-74, 76-85, 87-89, 94, 98-103, 107-111, 113-116** and **117-123** were also rejected under 35 U.S.C. § 103(a) in view of the '832 patent of Richardson. It was asserted that the subject matter of the rejected claims differs from the disclosure of Richardson in that it requires that the claimed insulating glass unit has a U value substantially equal to or less than 0.2 BTU/hr-sq ft-F (claims **1, 34, 47, 68, 71, 98, 108** and **117**), or substantially less than or equal to 0.16 BTU/hr-sq-F (claims **10, 31, 55, 67, 80** and **110**).

The Office action asserted that it would have been obvious to one of ordinary skill in the art at the time the invention was made to fabricate the assembly to arrive at a door having a low heat transfer rate and low heat conductivity value and to decrease energy cost, since condensation would not form on the door. Applicants respectfully

traverse this rejection and submit that it should be withdrawn.

Nothing in the Richardson disclosure suggests that Richardson understood how to fabricate an insulated glass unit having glass panels coated with a low E coating such that the panels would have a U value sufficient to prevent the formation of condensation on the outer sheet of glass of the unit without the application of electricity for heating the glass panels. Only after reviewing the disclosure of the present application, which provides tables of design parameters combined in different permutations that can be used to construct the claimed insulated glass unit, does one of ordinary skill have sufficient information to achieve the claimed invention of an insulated glass unit that can function as a door of a refrigeration unit and prevent condensation without the application of electric current to heat the door.

The present Applicant's IGU provides improved properties that make the unit useful as a see through door for a refrigeration unit. The disclosed unit is not suggested and cannot be constructed from the prior art teachings of Richardson with using the claims of the present application as a blueprint. Where, as here, the prior art requires a selective combination of elements to render a subsequent invention obvious, there must be some reason for the selection or combination of elements other than hindsight obtained from the present Applicant's disclosure.

Richardson provides no teachings that even suggest how to make an IGU for use as a refrigeration unit door where condensation must be controlled without heating one of the glass units. Only with the hindsight provided by the present application, can a unit be constructed that will prevent condensation without heating the unit.

The present Applicant has determined that the insulated glass unit should have a U value substantially equal to or less than 0.2 BTU/hr-sq ft-F to eliminate the need for electric current to provide external heat to the door to control condensation. He further provides specific combinations of elements, including low-E coated glass panes with emissivity equal to or less than 0.05, which put one of skill in possession of the invention of the present application.

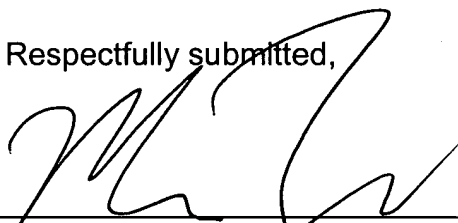
Because Richardson does not disclose or even suggest the subject matter of the claims of the present application, Applicant respectfully requests that the rejection of claims 1-3, 5-21, 23-25, 31-36, 40-42, 44-46, **47-60**, 65-70, **71-74**, 76-85, 87-89, 94, 98-103, 107-111, 113-116 and **117-123** under 35 U.S.C. § 103(a) be withdrawn.

Applicant believes that the claims of the present application are in condition for allowance and respectfully asks for a timely notice to that effect. If the Examiner is aware of other issues not addressed by this response, Applicant respectfully asks that she contact his undersigned representatives so that those issues can be resolved in a timely manner.

Respectfully submitted,

April 23, 2004

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